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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/713,474	11/14/2003	Darush Farshid	G-128	9140

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EXAMINER

DOUGLAS, JOHN CHRISTOPHER

ART UNIT PAPER NUMBER

1764

DATE MAILED: 06/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/713,474

Applicant(s)

FARSHID ET AL.

Examiner

John C. Douglas

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 November 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/19/2004</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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4. Claims 1 and 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moore, Jr. (US 6583186) in view of Cash (US 6200462).

5. With respect to claim 1, Moore discloses feeding a heavy Fischer-Tropsch product and hydrogen to a hydrocracking zone; cooling the hydrocracking zone effluent with hydrogen gas; mixing the hydrocracking effluent and hydrogen gas with a Fischer-Tropsch condensate; and feeding the mixture to a hydrotreating zone (see Moore, column 2, lines 45-56, column 7, lines 9 – column 8, line 9, column 12, lines 8-23 and Figure 1).

Moore does not disclose separating the hydrocracking effluent into a vapor stream and a liquid stream; where the vapor stream is mixed with the F-T condensate and hydrogen and sent to the hydrotreating zone; where the hydrotreating zone effluent is separated into a hydrogen-rich gaseous stream and a product stream; further separating the hydrogen-rich stream from liquid products; and recycling the hydrogen-rich stream to the hydrocracking zone and the hydrotreating zone.

However, Cash discloses separating a hydrocracking effluent into a vapor stream and a liquid stream; where the vapor stream is mixed with a hydrocarbon stream and hydrogen and sent to a hydrotreating zone; separating the hydrotreating zone effluent into a hydrogen-rich gaseous stream and a product stream; and recycling the hydrogen-rich stream to the hydrocracking zone and the hydrotreating zone (see Moore, column 3, line 59 – column 6, line 60 and Figure 1).

Moore discloses that recycling the hydrogen to the hydrocracking zone and the hydrotreating zone lowers costs (see Moore, column 3, lines 6-15).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the process of Moore to include separating the hydrocracking effluent into a vapor stream and a liquid stream; where the vapor stream is mixed with the F-T condensate and hydrogen and sent to the hydrotreating zone; where the hydrotreating zone effluent is separated into a hydrogen-rich gaseous stream and a product stream; and recycling the hydrogen-rich stream to the hydrocracking zone and the hydrotreating zone in order to lower costs.

Also, it would have been obvious to further separating the hydrogen-rich stream from liquid products. According to *In re Harza*, 274 F.2d 669 (CCPA 1960), the mere duplication of parts has no patentable significance unless a new and unexpected result is provided (see MPEP 2144.04 VI. B.). In addition, Moore discloses that recycling the hydrogen to the hydrocracking zone and the hydrotreating zone lowers costs (see Moore, column 3, lines 6-15). Therefore, it would have been obvious to duplicate the separation of the vapor in order to recycle more hydrogen to further lower costs.

6. With respect to claim 7, Moore discloses where the heavy hydrocarbon has a normal boiling point above 650 degrees F (see Moore, column 1, lines 49-54).
7. With respect to claims 8 and 9, Moore discloses where the condensate boils below 700 degrees F with predominately C5-C20 components (see Moore, column 1, lines 49-56).
8. With respect to claim 10, Cash discloses hydrocracking conditions including a temperature between 204 to 510 degrees C, a pressure between 500 and 5000 psig, a

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feed rate between 0.1 to 15 l/h, and a hydrogen consumption rate of 500 to 2500 scf/bbl (see Cash, column 5, lines 53-57).

9. With respect to claim 11, Cash discloses hydrotreating conditions including a temperature between 204 and 482 degrees C, a pressure between 500 to 5000 psig, a feed rate between 0.5 and 20 l/h, and a hydrogen consumption of 500 to 2000 scf/bbl (see Cash, column 7, lines 10-17).

10. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moore in view of Cash as applied to claim 1 above, and further in view of Ireland (US 4052477). Moore in view of Cash disclose everything in claim 1 (see paragraph 5) and Cash discloses where the liquid hydrocarbon product stream is sent to fractionation to produce a naphtha stream, kerosene, diesel, and a bottoms product stream. Moore in view of Cash do not disclose where liquid product from the second separation is further separated into a liquid product and a light gaseous stream which is sent to fuel gas.

However, Ireland discloses a separation of a hydrocarbon stream to recover fuel gas (see Ireland, column 4, lines 46-53).

Ireland discloses that it is desirable to obtain highly valuable hydrocarbons such as fuel gas (see Ireland, column 1, lines 35-40).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the process of Moore in view of Cash to include a separation of a hydrocarbon stream to recover fuel gas because fuel gas is a highly valued hydrocarbon product.

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11. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moore in view of Cash as applied to claim 1 above, and further in view of Dancuart (US 6475375). Moore in view of Cash disclose everything in claim 1 (see paragraph 5) and Cash discloses where the liquid fractions of the separation following hydrocracking and the separation following hydrotreatment are combined (see Cash, column 6, lines 54-60 and Figure 1) and where the hydrogen-rich streams are recycled to the hydrocracking zone and the hydrotreatment zone (see Cash, column 4, lines 55-67 and Figure 1). Moore in view of Cash do not disclose separating the combined stream into a light stream and a heavy stream that is sent to fractionation and where the light stream is combined with the liquid products stream of the second separation.

However, Dancuart discloses where the separated light F-T that is hydrotreated and the hydrocracked heavy F-T are combined and then fractionated and a portion of the separated light F-T is sent to a separate fractionation and the products of both fractionations are combined (see Dancuart, column 6, line 47 – column 7, line 7).

Dancuart discloses that such a process produces middle distillates having good cold flow properties (see Dancuart, column 4, lines 14-17).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the process of Moore in view of Cash to include where the separated light F-T that is hydrotreated and the hydrocracked heavy F-T are combined and then fractionated and a portion of the separated light F-T is sent to a separate fractionation and the products of both fractionations are combined in order to produce middle distillates having good cold flow properties.

12. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moore in view of Cash as applied to claim 1 above, and further in view of Chen (US 4851109). Moore in view of Cash discloses everything in claim 1 (see paragraph 5), but do not disclose the hydrocracking zone achieves between 30% and 90% conversion.

However, Chen discloses a hydrocracking zone that achieves 30-50 percent conversion (see Chen, column 17, lines 40-49).

Chen discloses that the use of such a low to moderate hydrocracking severity increases distillate yields (see Chen, column 17, lines 30-35).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the process of Moore in view of Cash to include a hydrocracking zone that achieves 30-50 percent conversion in order to increase distillate yields.

### ***Conclusion***

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Wittenbrink (US 6103773); Wittenbrink (US 5888376); Wittenbrink (US 5882505); and Mukherjee (US 6797154).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John C. Douglas whose telephone number is 571-272-1087. The examiner can normally be reached on 7:30 A.M. to 4:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola can be reached on 571-272-1444. The fax phone




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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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